

Ten New Subspecies of the Genus *Eurema* (Lepidoptera, Pieridae) from the Indo-Australian Region

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Synopsis Ten new subspecies belonging to four *Eurema* species from the Indo-Australian Region were described. These are *E. brigitta papuana* from N. E. Papua New Guinea, *E. andersoni inouei* from Cambodia, *E. andersoni borneensis* from E. Malaysia, *E. andersoni nishiyamai* from Nias Is., *E. andersoni kashiwaii* from Sumba Is., *E. sarilata luzonensis* from Luzon, *E. sarilata bazilana* from Bazilan Is., *E. alitha gunjii* from Ceram, *E. alitha halmaherana* from Halmahera, and *E. alitha papuana* from W. Irian. Four new status in *Eurema alitha* were also made.

Introduction

We found 20 or more new forms including three new species of the genus *Eurema* from the Indo-Australian region in the course of our revisional work on the Old World species of this genus. Of these forms we described three new species from Indo-China, Mindanao and Timor, and one new subspecies from Indo-China (SHIRÔZU & YATA, 1973; 1977). In the present paper, we describe 10 new subspecies belonging to four species from the Southeast Asia and New Guinea. Although all the new subspecies treated here were checked with the male genitalia, detailed results were eliminated.

Abbreviations used for type depositories are as follows:

- DAB: Department of Agriculture, Bangkok.
KUCGE: Kyushu University, College of General Education, Fukuoka.
KUFA: Kyushu University, Faculty of Agriculture, Fukuoka.
MUFA: Meijo University, Faculty of Agriculture, Nagoya.
NSM: National Science Museum (Nat. Hist.), Tokyo.
OMNH: Osaka Museum of Natural History, Osaka.

Eurema brigitta papuana SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguishable from subspecies *zoraide* from Australia by the following combination of characters.

♂ ♀ (Figs. 1-4). Upperside with black costal border broader and more distinct; forewing fringe black, but mixed with pale yellow, while hindwing one pale yellow; basal portion of wings more heavily and widely black dusted.

Underside markings disappearing except for faint discocellular spot; vein-dots barely traceable.

Forewing somewhat more strongly angulate at apex.

Forewing length: ♂, 15.5-17.0 mm (avg 16.3 mm, n=2); ♀, 13.5-18.0 mm

(avg 16.5 mm, n=4).

Type-locality. N. E. Papua New Guinea, Kundiawa.

Geographical distribution: This new subspecies occurs in Papua New Guinea.

Holotype: ♂, N. E. Papua New Guinea, Kundiawa, 21. xii. 1973, S. SUEFUJI leg. (KUCGE).

Paratypes: S. E. Papua New Guinea, Graraina, 1 ♂, 1. i. 1971, A. SIBATANI leg. (KUCGE); N. E. Papua New Guinea, Goroka, 4 ♀, 19–20. xii. 1973, S. SUEFUJI leg. (KUCGE).

Remarks. This subspecies is easily distinguished from other subspecies by the disappearance of underside all markings except for the discocellular spots.

Eurema andersoni inouei SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguished from subspecies *andersoni* from Mergui Iss. and Malay Peninsula by the following combination of characters.

♂ (Figs. 5–6). Upperside ground colour somewhat darker; forewing black costal border somewhat narrower and more sharply defined in dry-season form, and its inner margin somewhat diffused in wet-season one; forewing black distal border broader, with its inner margin in space 1 sometimes inclined towards base in wet-season form; hindwing black distal border broader, scattered black scales continuing along vein 1 from tornus to base in wet-season form, but somewhat narrower in dry-season one.

Underside forewing with chocolate brown subapical patch more sharply defined.

Forewing length: 18.0–22.0 mm (avg 19.7 mm, n=16).

♀ (Figs. 7–8). Uppside with black distal border much broader (about 1.5× as wide as in nominate subspecies), with its inner margin in space 1 inclined towards base.

Underside forewing with subapical patch somewhat fainter.

Forewing length: 18.0–19.0 mm (avg 18.5 mm, n=2).

Type-locality. Cambodia, Kampot, Tuk Chhov.

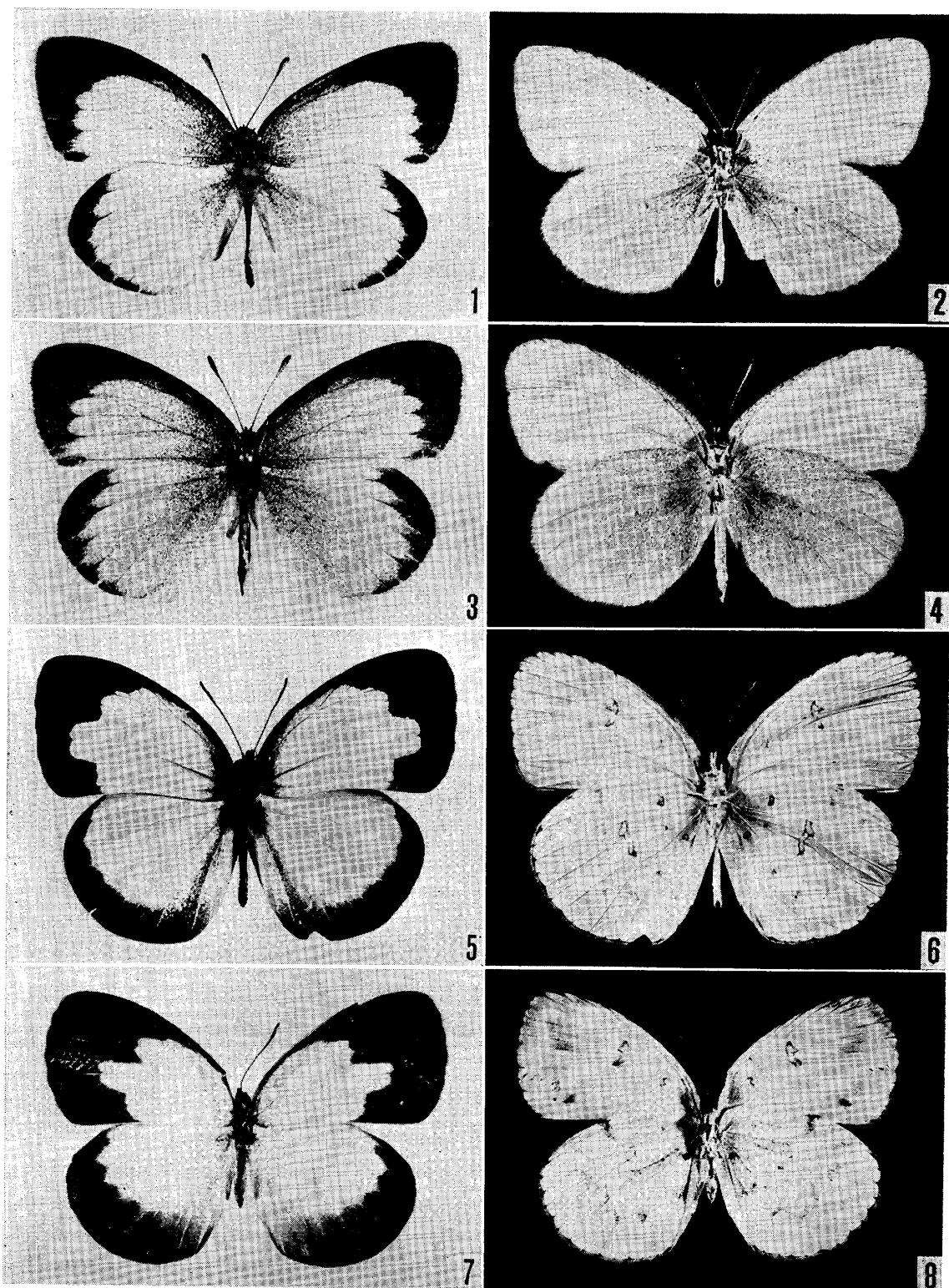
Geographical distribution: This new subspecies is distributed from S. Viet-Nam, Cambodia to Thailand.

Holotype: ♂, Cambodia, Kampot, Tuk Chhov, 17. iv. 1962, S. INOUE leg. (KUCGE).

Paratypes: Cambodia, Kampot, Tuk Chhov, 2 ♂, 17. iv. 1962, S. INOUE leg. (KUCGE). S. Viet-Nam: Trang Bom, 1 ♂, 7. viii. 1960, 1 ♀, 10. vi. 1962, 2 ♂, 2 ♂, 15. vii. 1962; Dinh Quan, 1 ♂, 6. v. 1962; Banmethout, 1 ♂, 16. viii. 1962, S. INOUE leg. (KUCGE). Thailand: Khao Yoi, 4 ♂, Chon Buri, 1 ♀ (DAB); Nakhon Ratchasima, 2 ♂, 14. iv. 1972, Y. YOSHIYASU leg. (KUCGE).

Remarks. This new subspecies is easily distinguished, especially in the female, from other subspecies by its very broad black distal border in wet-season form.

Although the *andersoni* race from Indo-China has been included in subspecies *andersoni* (MOORE, 1886), we recognize the former as a different subspecies for the following reasons: The new subspecies has the constantly distinct external feature, very broad black distal border, in wet-season form as well as in dry-season one. More-



Figs. 1-4. *Eurema brigitta papuana* spp. nov. (1) ♂, holotype; (2) ditto, underside; (3) ♀, paratype, Goroka, N. E. Papua New Guinea; (4) ditto, underside. Figs. 5-8. *E. andersoni inouei* ssp. nov. (5) ♂, holotype; (6) ditto, underside; (7) ♀, paratype, Trang Bom, S. Viet-Nam; (8) ditto, underside.

over *E. andersoni*, being a local non-migratory forest species, shows distinct subspeciation in its whole distributional range.

The subspecific name, *inouei*, is dedicated to Mr. Sadanobu INOUE, one of the collectors of the type-series.

***Eurema andersoni borneensis* SHIRÔZU & YATA, ssp. nov.**

This new subspecies is distinguishable from subspecies *andersoni* from Mergui Iss. and Malay Peninsula by the following combination of characters.

♂ (Figs. 9–10). Underside ground colour somewhat paler; markings much fainter; forewing apical patch barely traceable.

Forewing length: 15.8–21.5 mm (avg 19.6 mm, n=8).

♀ (Figs. 11–12). Upperside ground colour usually milky-white (of 20 female specimens we examined, only one is pale greenish yellow as in the female of nominate subspecies).

Underside ground colour usually milky-white, diffusely margined with pale greenish yellow; markings much fainter.

Forewing length: 18.0–21.0 mm (avg 19.4 mm, n=10).

Type-locality. Borneo, E. Malaysia, Sarawak, Santuboung.

Geographical distribution: This new subspecies occurs in E. Malaysia.

Holotype: ♂, Borneo, Sarawak, Santuboung, 19. ix. 1975, H. SHIMA (KUCGE).

Paratypes: Sarawak: Santuboung, 2♂ 1♀, 19. xi. 1975, H. SHIMA (KUCGE); Kuala Bok, 2♂, 28. ii–6. iii. 1969, T. KUNOU & Y. ARITA (MUFA); 1♂, Lohang, 14. viii. 1969, F. NAGAO (NSM). Sabah: Kinabalu, 1♂, 17. v. 1980, Y. NISHIYAMA (KUCGE), 2♀, 14–16. vii. 1973, M. NAKAYAMA (KUCGE), 1♀, 11. viii. 1968 (OMNH); Poring, 3♂ 1♀, 1–7. i. 1975, N. KÔDA (KUCGE); Tomani, 1♂ 1♀, 20.i. 1975, N. KÔDA (KUCGE).

Remarks. This subspecies is usually distinguishable from other subspecies by its milky-white ground colour in the female and its very faint underside markings. Although this subspecies also has been included in subspecies *andersoni*, we treat it as the different subspecies for the reasons mentioned above.

***Eurema andersoni nishiyamai* SHIRÔZU & YATA, ssp. nov.**

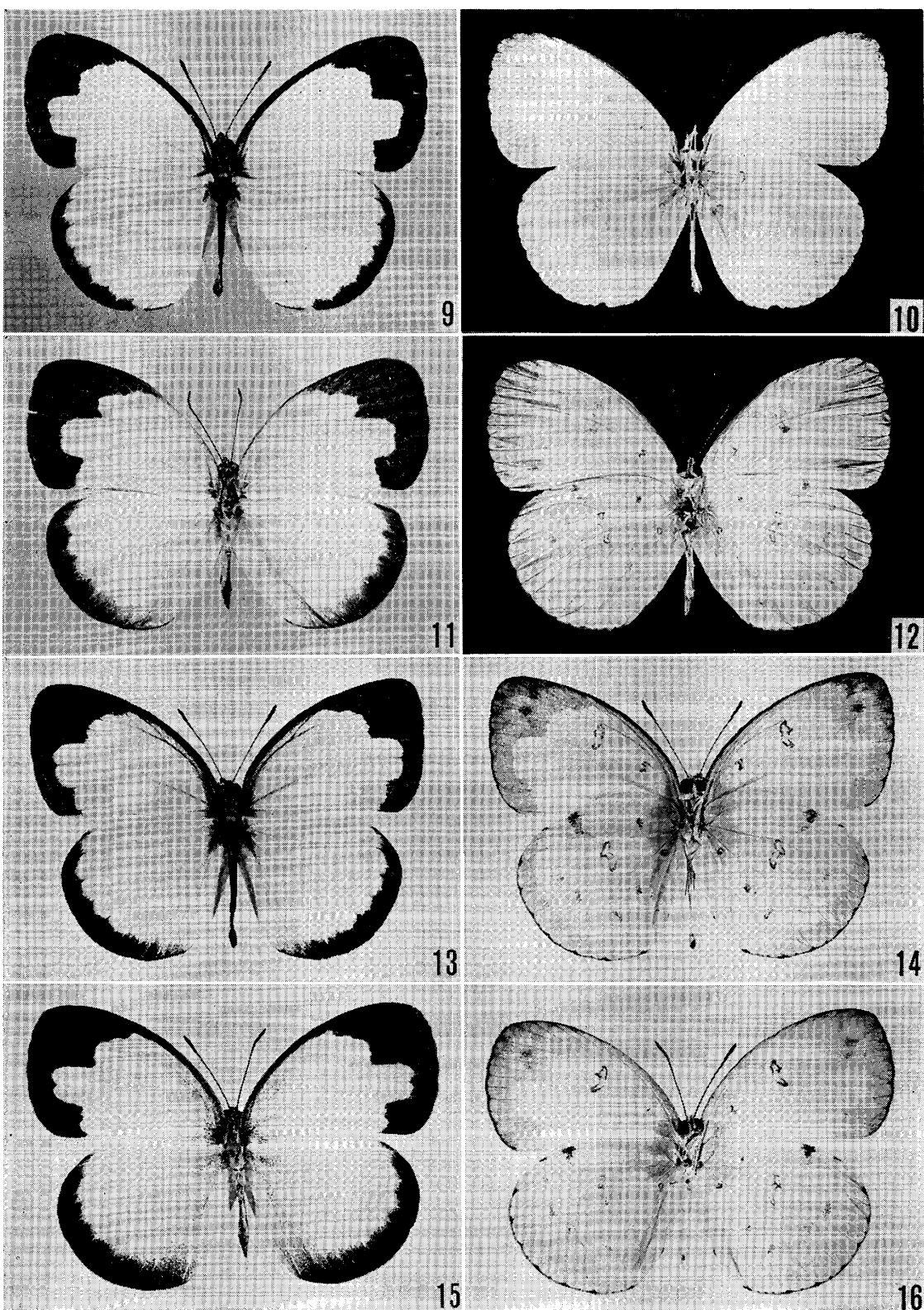
This new subspecies is distinguishable from subspecies *andersoni* from Mergui Iss. and Malay Peninsula by the following combination of characters.

♂ (Figs. 13–14). Upperside forewing with black distal border somewhat narrower, sometimes obtuse-angled at vein 4, with its inner margin in space 1 inclined towards base.

Underside markings somewhat reduced and fainter, especially in hindwing a series of submarginal spots almost disappearing in space 6; subbasal dot in discoidal cell absent.

Forewing length: 19.5–21.0 mm (avg 20.2 mm, n=3).

♀ (Figs. 15–16). Upperside forewing with black distal border with its inner margin more deeply excavated in space 3 than in space 2, and that in space 1 inclined towards base.



Figs. 9–12. *Eurema andersoni borneensis* ssp. nov. (9) ♂, holotype, (10) ditto, underside; (11) ♀, paratype, Kuala Bok, Sarawak; (12) ditto, underside. Figs. 13–16. *E. andersoni nishiyamai* ssp. nov. (13) ♂, holotype; (14) ditto, underside; (15) ♀, paratype, Telukdalam, S. Nias; (16) ditto, underside.

Underside markings similar to male, but subbasal dot in discoidal cell present.

Forewing length: 19.5 mm.

Type-locality. Indonesia, Nias Is., S. Nias, Telukdalam.

Geographical distribution: This new subspecies is known only from Nias Is.

Holotype: ♂, Nias Is., S. Nias, Telukdalam, vi. 1979, Y. NISHIYAMA leg. (KUCGE).

Paratypes: 2♂ 1♀, same data as holotype (KUCGE).

Remarks. This subspecies is distinguished from other subspecies by the absence of hindwing submarginal spot in space 6.

The subspecific name, *nishiyamai*, is dedicated to Mr. Yasusuke NISHIYAMA who collected the type-series.

Eurema andersoni kashiwaii SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguishable from subspecies *andersoni* from Mergui Iss. and Malay Peninsula by the following combination of characters.

♂ (Figs. 17–18). Underside markings well developed and forewing subapical and tornal patches always present; on hindwing a subbasal ring spot each in spaces 1 and 7 and discoidal cell.

Forewing length: 17.0–20.0 mm (avg 18.9 mm, n=12).

♀ (Figs. 19–20). Upperside hindwing with black distal border somewhat narrower.

Underside marking similar to male, but subapical patch more strongly developed and partially confluent with marginal black smudge; elongate tornal spot accompanying a submarginal spot in space 2.

Forewing length: 19.0–19.5 mm (avg 19.3 mm, n=3).

Type-locality. Indonesia, Sumba Is., E. Sumba, Kambata, Wandut, Lewapaku.

Geographical distribution: This new subspecies is known only from Sumba Is.

Holotype: ♂, Sumba Is., E. Sumba, Kambata, Wandut, Lewapaku, 10. ix. 1979, N. KASHIWAI leg. (KUCGE).

Paratypes: Sumba Is., E. Sumba, Kambata, Wandut, Lewapaku, 10♂ 3♀, 6–10. ix. 1979, N. KASHIWAI leg. (KUCGE).

Remarks. This subspecies is distinguished in the male from other subspecies by its well developed elongate tornal patch. This local butterfly inhabits the forest and prefers the sunny places in E. Sumba (Mr. N. KASHIWAI, personal communication).

Eurema sarilata luzonensis SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguishable from subspecies *sarilata* from Mindanao by the following combination of characters.

♂ (Figs. 21–22). Upperside ground colour somewhat paler; black distal border slightly narrower, especially in the specimens collected in dry-season.

Underside ground colour somewhat paler; spotted markings fainter in the specimens collected in wet-season.

♀ (Figs. 23–24). Upperside black distal border somewhat narrower; basal part

of wings more weakly black dusted.

Underside spotted markings fainter in the specimens collected in wet-season.

Forewing length: 20.0–21.0 mm (avg 20.8 mm, n=12).

Type-locality. The Philippines, Luzon, Mt. Maquiling.

Geographical distribution: This new subspecies occurs in Luzon and Marinduque Is.

Holotype: ♂, Luzon, Mt. Maquiling, 1. v. 1973, H. FUKUDA leg. (KUCGE).

Paratypes: Luzon: Pagsahan, 1 ♂, 14. iii. 1970, A. MIYATA leg. (KUCGE); Mt. Maquiling, 1 ♂, 9. v. 1973, 2 ♂, 10. vii. 1973, H. FUKUDA (KUCGE), 7 ♂, 10–26. viii. 1978, A. NAKANISHI & YATA leg. (KUCGE).

Remarks. This subspecies is distinguished from other subspecies by the narrower black distal border, especially in the specimens collected in dry-season, and the paler ground colour of male.

Eurema sarilata bazilana SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguishable from subspecies *sarilata* from Mindanao by the following combination of characters.

♂ (Figs. 25–26). Upperside black distal border somewhat narrower.

Underside spotted markings fainter and tornal spot disappearing.

Forewing length: 21.0–22.0 mm (avg 21.4 mm, n=4).

♀ (Figs. 27–28). Upperside black distal border narrower; basal portion of wings more weakly black dusted.

Underside spotted markings fainter and tornal spot always disappearing.

Forewing length: 21.0–23.0 mm (avg 22.0 mm, n=2).

Type-locality. The Philippines, Bazilan Is., Maloong.

Geographical distribution: This new subspecies is known only from Bazilan Is.

Holotype: ♂, Bazilan Is., Maloong, 16. vii. 1931, K. KAWASHIMA leg. (KUFA).

Paratypes: Bazilan Is., Maloong, 1 ♂, 20. xi. 1931, 2 ♂, 24. x. 1932, 1 ♀, 12. x. 1931, 1 ♀, 15. vi. 1932, K. KAWASHIMA leg. (KUFA).

Remarks. This subspecies is distinguished from subspecies *sarilata* by the narrower black distal border, the more indistinct underside markings and the smaller size.

Eurema alitha gunjii SHIRÔZU & YATA, ssp. nov.

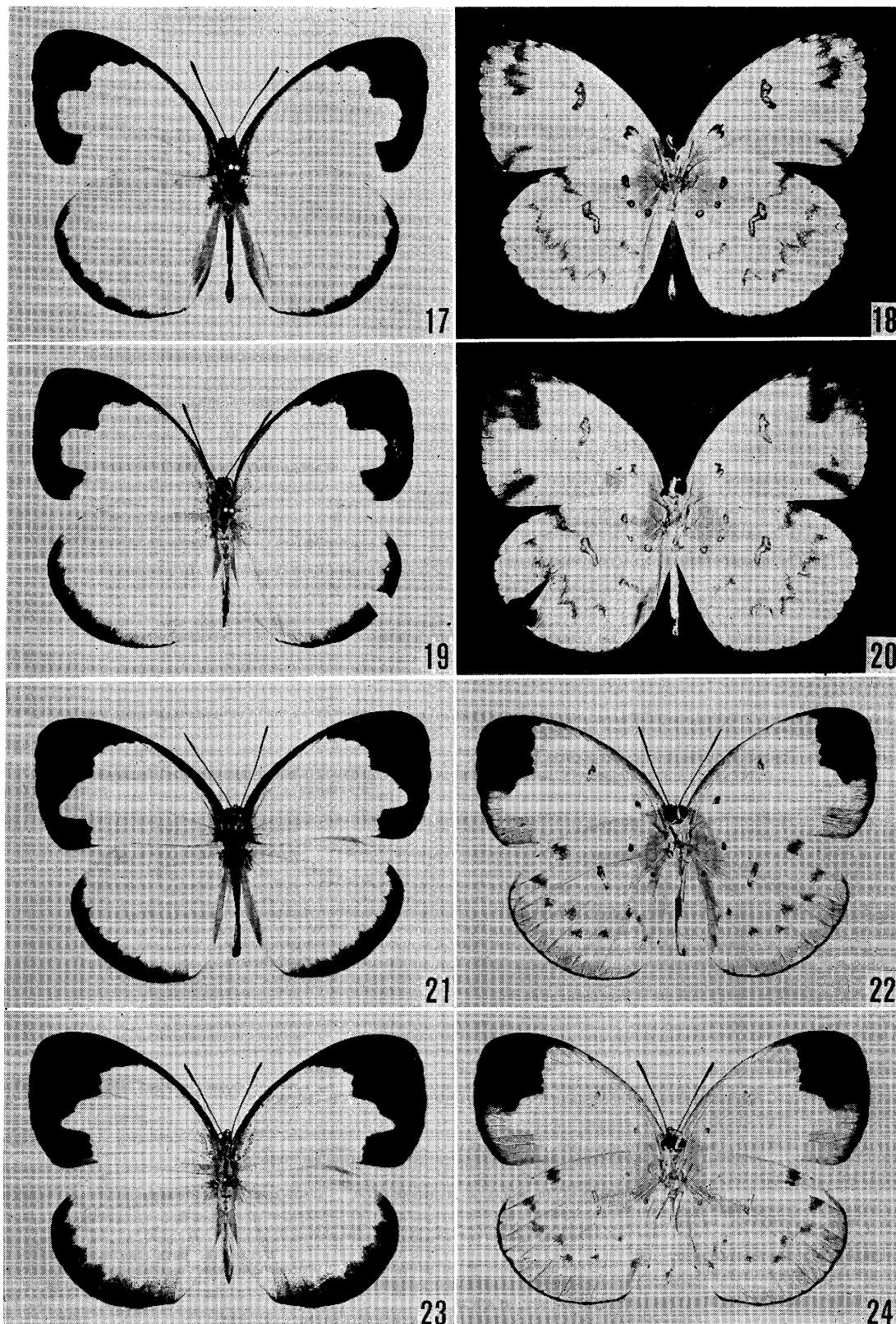
This new subspecies is distinguishable from subspecies *esakii* from Taiwan by the following combination of characters.

♂ (Figs. 29–30). Upperside with forewing black distal border with its inner margin more strongly dentate from costa to vein 4, almost right angled at vein 4, and less deeply excavated in spaces 2 and 3 where each bottom of concave usually sharply pointed.

Underside ground colour somewhat darker; markings somewhat fainter; in forewing vein-dots connected with black anteciliary line, and sometimes so in hindwing.

Forewing apex and hindwing distal margin rounder.

Forewing length: 18.0–21.0 mm (avg 19.3 mm, n=8).



Figs. 17-20. *Eurema andersoni kashiwaii* ssp. nov. (17) ♂, holotype; (18) ditto, underside; (19) ♀, paratype, Kambata, E. Sumba; (20) ditto, underside. Figs. 21-24. *E. sarilata luzonensis* ssp. nov. (21) ♂, holotype; (22) ditto, underside; (23) ♀, paratype, Mt. Maquiling, Luzon; (24) ditto, underside.

♀ (Figs. 31–32). The females of this subspecies may be represented by the “white form” and the “yellow form”.

White form. Ground colour bright pure white and in hindwing suffused with greenish yellow, especially basally and distally. Forewing apex rounder.

Forewing length: 20.0 mm.

Yellow form. Similar to *gunjii* male, but ground colour paler, and hindwing black distal border with its inner margin more waved and more heavily diffused.

Forewing length: 19.5 mm (avg 19.5, n=2).

Type-locality. Indonesia, Ceram, Kamarian.

Geographical distribution: This subspecies occurs in Ceram and Ambon.

Holotype: ♂, Ceram, Kamarian, 26. i. 1973, Y. GUNJI leg. (KUCGE).

Paratypes: Ceram, Kamarian, 4 ♂, 24. i.–28. ii. 1973, Y. GUNJI leg. (KUCGE), 3 ♀, 25–26. i. 1973, Y. GUNJI leg. (KUCGE); Ambon, 3 ♂, 18. i.–2. ii. 1973, Y. GUNJI leg. (KUCGE).

Remarks. This new subspecies is similar to *halmaherana*, but distinguishable from the latter by the forewing black distal border less deeply excavated in the spaces 2 and 3 and by the broader hindwing one. In facies this subspecies might also be confused with *E. hecabe diversa* from Buru, Obi, Ambon and Ceram, but in the former the inner margin of forewing black distal border is pointed in each bottom of concave in spaces 2 and 3, and that of broad hindwing distal border is prominently waved. We are unable to safely separate the “white form” female of this subspecies from that of *E. hecabe diversa*. The former may be conveniently distinguished from the latter by the bright pure-white ground colour and broad hindwing distal border.

The subspecific name, *gunjii*, is dedicated to Mr. Yoshiaki GUNJI who collected the type-series.

Eurema alitha halmaherana SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguished from subspecies *esakii* from Taiwan by the following combination of characters.

♂ (Figs. 33–34). Upperside with forewing black costal border narrower and more indistinct; forewing black distal border somewhat narrower, with its inner margin more strongly dentate from costa to vein 4, almost right angled at vein 4, and somewhat more deeply excavated in spaces 2 and 3 where each bottom of concave sharply pointed; hindwing black distal border generally narrower, with its inner edge more distinctly zigzag-shaped, but not reduced to vein-dots.

Underside ground colour darker; a series of subapical spot sometimes appearing.

Forewing apex and hindwing distal margin somewhat rounder.

Forewing length: 18.5–23.0 mm (avg 20.8 mm, n=13).

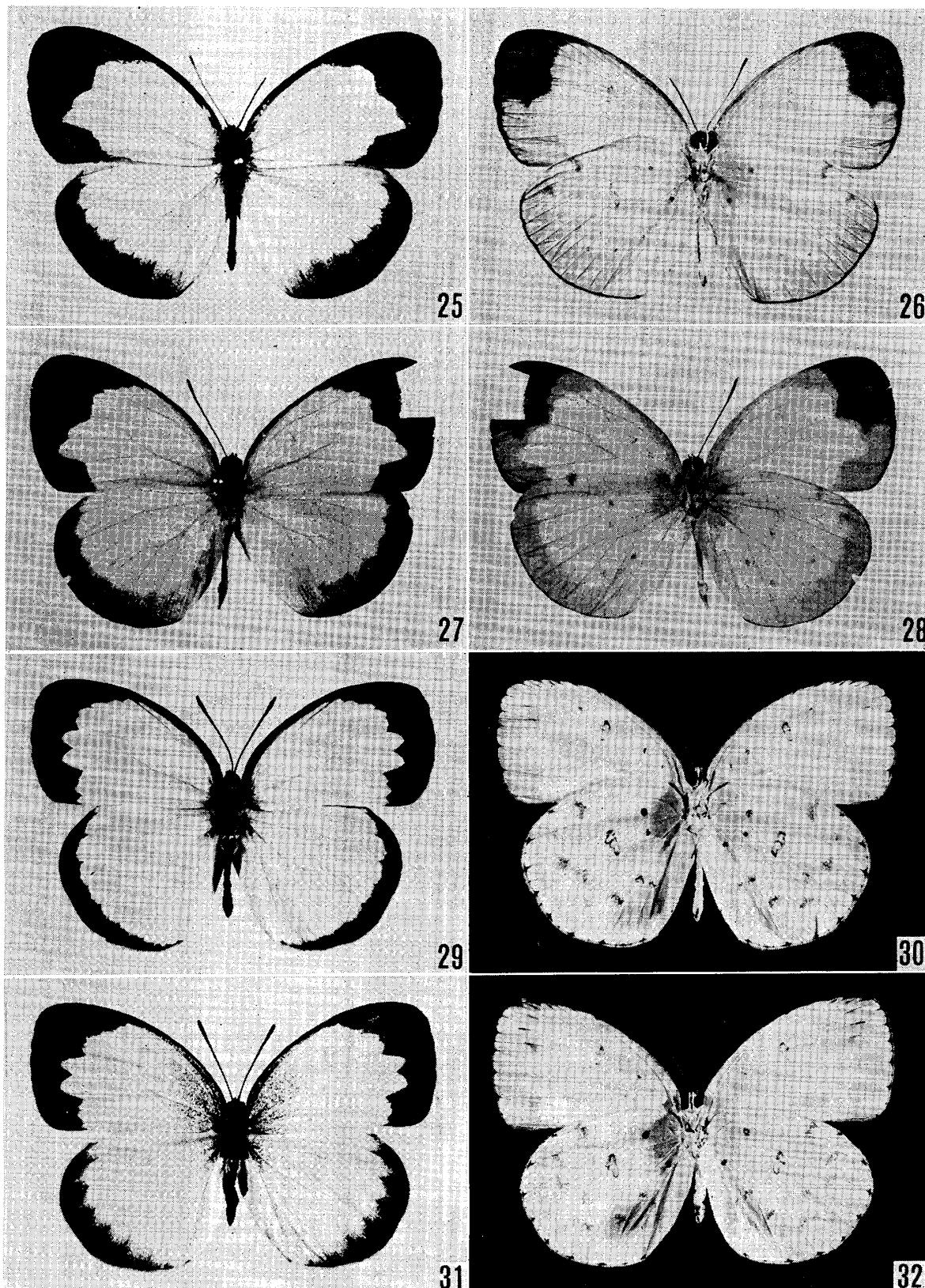
♀ (Figs. 35–36). Similar to *halmaherana* male, but ground colour paler and black dusted basally, and hindwing black distal border broader.

Forewing length: 18.3–21.0 mm (avg 19.7 mm, n=2).

Type-locality. Indonesia, Halmahera Is., Djailolo.

Geographical distribution: This subspecies occurs in Halmahera Is. and Ternate Is.

Holotype: ♂, Halmahera, Djailolo, 23. xii. 1972, Y. GUNJI leg. (KUCGE).



Figs. 25-28. *Eurema sarilata bazilana* ssp. nov. (25) ♂, holotype; (26) ditto, underside; (27) ♀, paratype; (28) ditto, underside. Figs. 29-32. *E. alitha gunjii* ssp. nov. (29) ♀, holotype; (30) ditto, underside; (31) ♀, paratype, Kamarian, Ceram; (32) ditto, underside.

Paratypes: Halmahera, Djailolo, 2♂ 1♀, 2–10. i. 1973, Y. GUNJI leg. (KUCGE); Ternate Is., 10♂ 2♀, 18. xii. 1972 – 20. i. 1973, Y. GUNJI leg. (KUCGE).

Remarks. This new subspecies might be confused with *E. hecabe asanga* from Halmahera and Batchan, but distinguishable by the forewing black distal border with its inner margin pointed in each bottom of concave in spaces 2 and 3.

Generally, *E. alitha* can be distinguished from *E. hecabe* by male genitalia as well as external features; the uncus of the former is longer than that of the latter, and the uncal projection of the former does not protrude upward, usually with more weakly bifurcate apex. The uncus of this new subspecies, however, is almost as long as that of *hecabe*, and the uncal projection of the former protrudes upward and its apex is very strongly bifurcate. Therefore, it is difficult to separate the new subspecies from *E. hecabe asanga* from Halmahera with the aid of male genitalia.

Eurema alitha papuana SHIRÔZU & YATA, ssp. nov.

This new subspecies is distinguishable from subspecies *esakii* from Taiwan by the following combination of characters.

♂ (Figs. 37–38). Upperside with forewing black distal border less deeply excavated in spaces 2 and 3; hindwing black distal border somewhat broader with its inner margin usually more sharply zigzag-shaped.

Underside forewing with vein-dots connected with each other by scattered black scales along wing margin, sometimes conjoined with a catenate black anteciliary line.

Forewing apex and hindwing distal margin somewhat rounder.

Forewing length: 16.0–21.0 mm (avg 19.4 mm, n=5).

♀ (Figs. 39–40). Upperside ground colour sometimes milky-white; forewing and hindwing black distal borders somewhat broader and the latter inner margin usually more sharply zigzag-shaped; the basal portion of wings more heavily black dusted.

Underside ground colour sometimes milky-white.

Forewing length: 16.0–19.5 mm (avg 17.3 mm, n=3).

Type-locality. Indonesia, W. Irian, Manokwari.

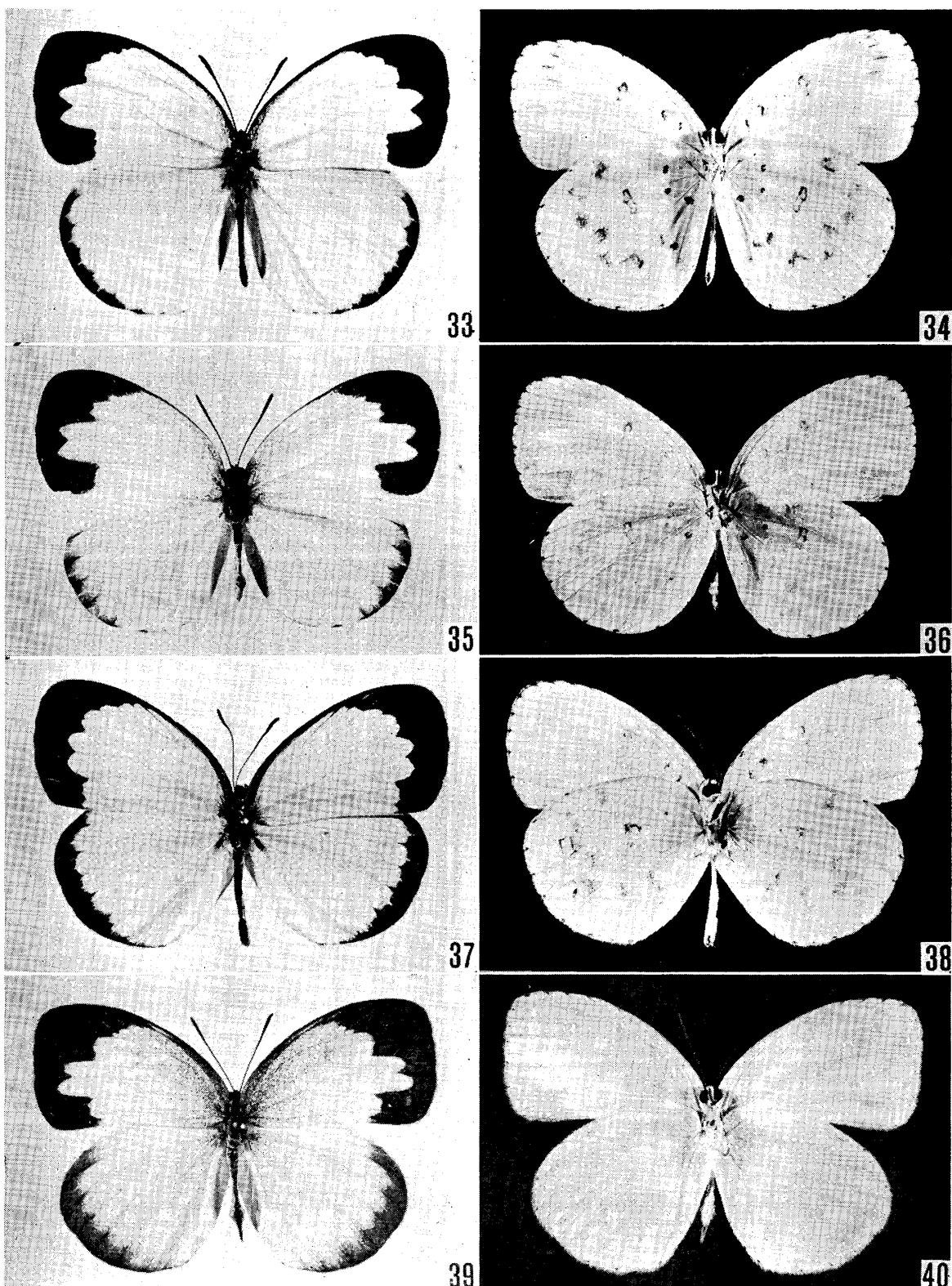
Geographical distribution: This subspecies occurs in New Guinea and Waigeo Is.

Holotype: ♂, W. Irian, Manokwari, 26. ii. 1918, NIIMURA coll. (NSM).

Paratypes: W. Irian: Sorong, 1♂, 16. ii. 1973, Y. GUNJI leg. (KUCGE); Manokwari, 1♂, 25. ii. 1918, NIIMURA coll. Papua New Guinea: Sogeri, 1♂, 14. xii. 1970, A. SIBATANI leg. (KUCGE); Port Moresby, 1♂ 2♀, 13–14. xii. 1970, A. SIBATANI leg. (KUCGE); Lae, 1♀, 19. i. 1974, S. SHINONAGA leg. (KUCGE).

Remarks. This subspecies is similar to subspecies *gunjii* from Ambon and Ceram, but distinguishable from the latter by the forewing black distal border with its inner margin evenly excavated in spaces 2 and 3. In appearance this subspecies could also be confused with *E. hecabe oeta* from New Guinea, but the former is separable from the latter by the black distal border usually shallowly excavated in spaces 2 and 3, the broad hindwing distal border with its inner margin distinctly zigzag-shaped, the darker ground colour in the male, and the somewhat rounder wing shape.

Eurema alitha has been confused with both *E. hecabe* and *E. tilaha* due to their



Figs. 33-36. *Eurema alitha halmaherana* ssp. nov. (33) ♂, holotype; (34) ditto, underside; (35) ♀, paratype, Djailolo, Halmahera; (36) ditto, underside. Figs. 37-40. *E. alitha papuana* ssp. nov. (37) ♂, holotype; (38) ditto, underside; (39) ♀, paratype, Lae, Papua New Guinea; (40) ditto, underside.

very similar externals. First, HOLLOWAY (1973) raised *alitha* to specific rank and included the following forms which were referred to *E. tilaha* by CORBET & PENDLEBURY (1932) in this species: *alitha* (FELDER); *gradiens* (BUTLER); *garama* (FRUHSTORFER); *bazilana* (FRUHSTORFER); *leytensis* (FRUHSTORFER); *samarana* (FRUHSTORFER); *sangira* (FRUHSTORFER); *zita* (FELDER); *lorquini* (FELDER); *djampeana* (FRUHSTORFER); *sanama* (FRUHSTORFER). He found that the male genitalia of several of these forms were closer to those of *E. hecate* than to those of *E. tilaha*. MORISHITA (1973) also considered *alitha* to be a distinct species and regarded *hondai* MORISHITA from Palawan and *esakii* SHIRÔZU from Taiwan as subspecies of *alitha* based mainly on the male genital structure. Basically, we agree with their treatment. In addition, we found that other subspecies of *alitha* occur in Sumatra, Java, the Lesser Sundas, Moluccas and New Guinea in the course of our revisional work on the Old World *Eurema*.

The following four forms from Sumatra, Java, Lesser Sundas and Palawan have been treated as subspecies of *hecate*. However, the examination of photographs of type-materials of these forms preserved in the British Museum (Natural History) proved that they are subspecies of *alitha*.

1. *Eurema alitha bidens* (BUTLER, 1886), **stat. nov.**
= *Eurema hecate latilimbata* (BUTLER, 1886).
Type-locality: Sumatra.
Geographical distribution: E. Sumatra.
2. *Eurema alitha sankapura* (FRUHSTORFER, 1910), **stat. nov.**
= *Eurema hecate sankapura* (FRUHSTORFER, 1910).
Type-locality: Bawean.
Geographical distribution: Bawean, Java, Bali and Lombok.
3. *Eurema alitha chemys* (FRUHSTORFER, 1910), **stat. nov.**
= *Eurema hecate chemys* (FRUHSTORFER, 1910).
Type-locality: Alor.
Geographical distribution: Alor, Sumbawa and Flores.
4. *Eurema alitha jalendra* (FRUHSTORFER, 1910), **stat. nov.**
= *Eurema hecate jalendra* (FRUHSTORFER, 1910).
= *Eurema alitha hondai* MORISHITA, 1973, **syn. nov.**
Type-locality: Palawan.
Geographical distribution: Palawan.

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抄 錄

インド, オーストラリア地域から, *Eurema* 属 4 種に属する次の 10 新亜種を記載した: *Eurema brigitta papuana* [パプアニューギニア], *E. andersoni inouei* [カンボジア], *E. andersoni borneensis* [東マレイシア], *E. andersoni nishiyamai* [ニアス], *E. andersoni kashiwaii* [スンバ], *E. sarilata luzonensis* [ルソン], *E. sarilata bazilana* [バシラン], *E. alitha gunjii* [セラム], *E. alitha halma herana* [ハルマヘラ], *E. alitha papuana* [西イリアン].

タイプ標本の検討にもとづき, *Eurema alitha* における次の 4 つの new status を提案した: *Eurema alitha bidens* [スマトラ], *E. a. sankapura* [Bawean], *E. a. chemys* [Alor], *E. a. jalendra* [パラワン]. ([] 内は各タクサの基産地).

References

- CORBET, A. S. & H. M. PENDLEBURY, 1932. A revision of the Indo-Australian species of the genus *Eurema* with special reference to the Malaysian forms. *Bull. Raffles Mus.*, (7): 143-192.
 HOLLOWAY, J. D., 1973. The affinities within four butterfly groups (Lepidoptera: Rhopalocera) in relation to general patterns of butterfly distribution in the Indo-Australian area. *Trans. R. ent. Soc. Lond.*, **125**: 125-176.
 MORISHITA, K., 1973. The genus *Eurema* from Palawan Island, Philippines (Lepidoptera: Pieridae). *Tyô to Ga*, **24**: 99-105.
 SHIRÔZU, T. & O. YATA, 1973. The genus *Eurema* of South Viet-Nam and Cambodia (Lepidoptera: Pieridae). *Sieboldia*, **4**: 121-145.
 —— 1977. Two new species of the genus *Eurema* (Lepidoptera, Pieridae) from Indonesia and the Philippines. *Kontyû, Tokyo*, **45**: 338-348.